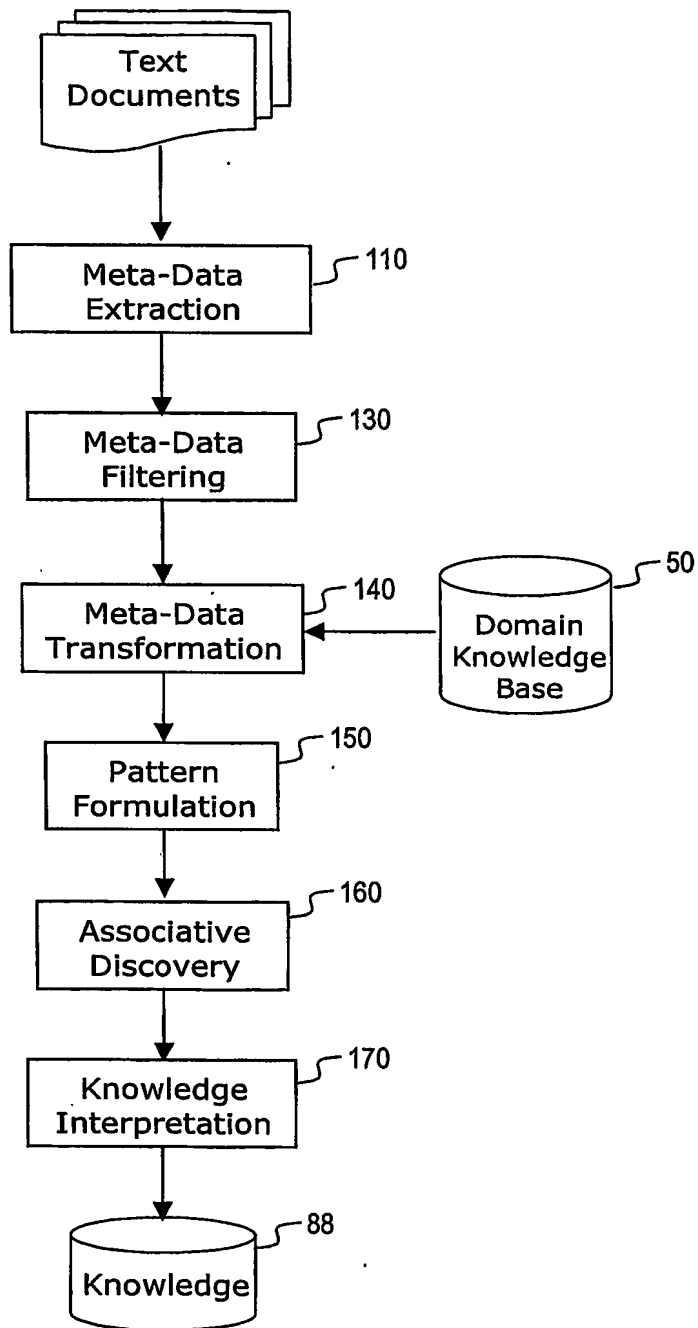
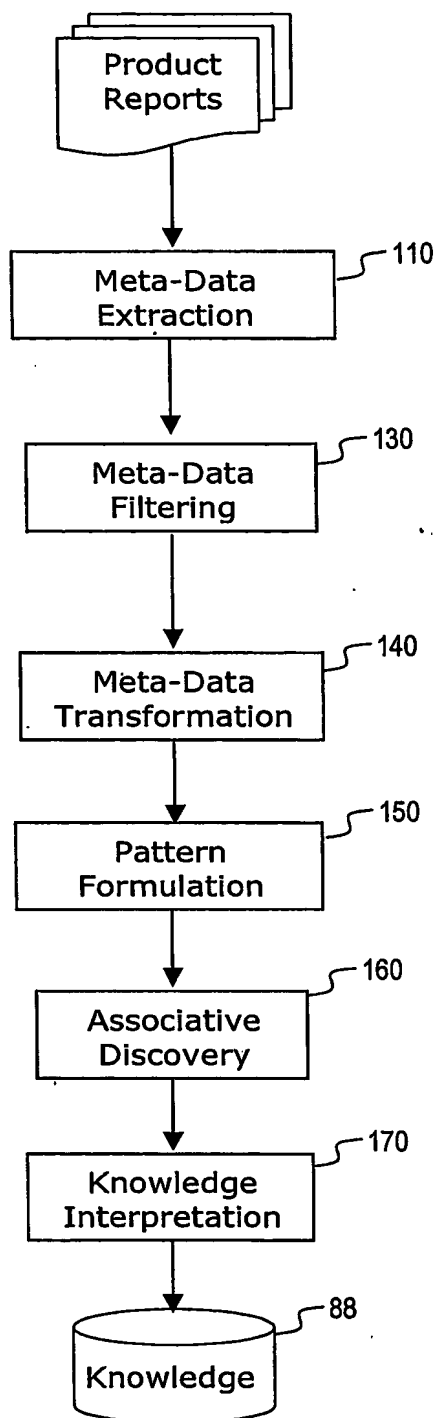
**FIG. 1**

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**FIG. 2A**

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Product A is believed to be
associated with cancer ...

...

(Product A, →, cancer)
(Product B, →, cancer)
(Product B, →, high blood pressure)
(Product C, →, heart attack)

...

(P_A, →, cancer)
(P_B, →, cancer)

...

Product to Product Attributes

P_A to r_{A1}, r_{A2}, ..., r_{AN}

P_B to r_{B1}, r_{B2}, ..., r_{BN}

...

((r_{A1}, r_{A2}, ..., r_{AN}), C)
((r_{B1}, r_{B2}, ..., r_{BN}), C)

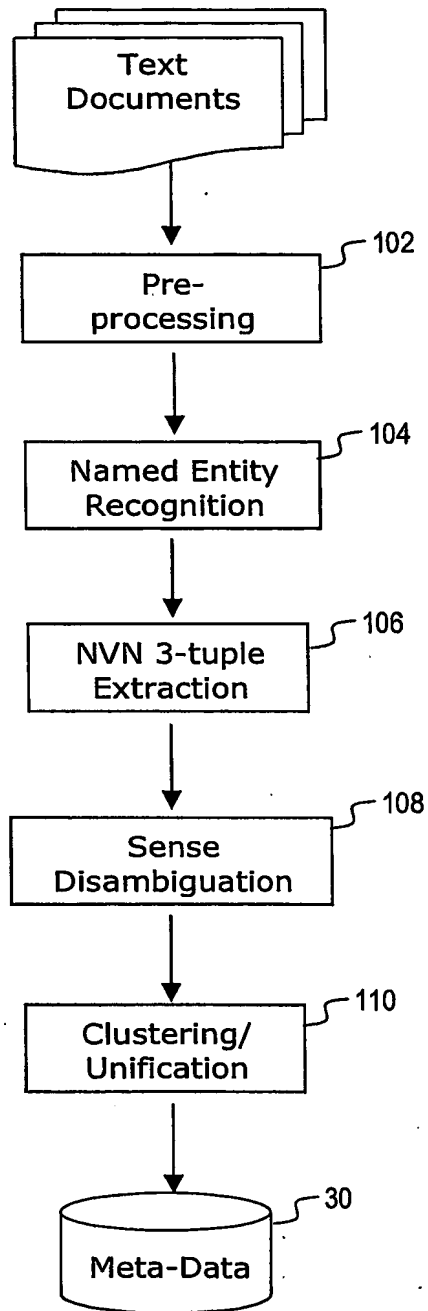
...

E.g.,
manufacturer → Cancer
component_A, component_B → Cancer

...

FIG. 2B

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**FIG. 3**

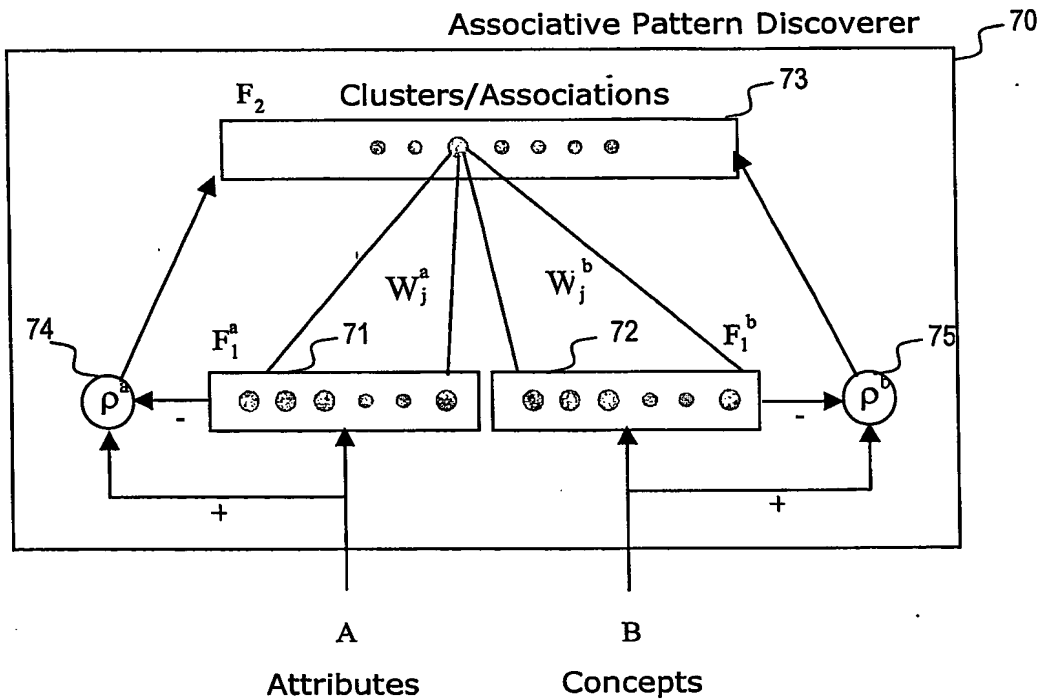
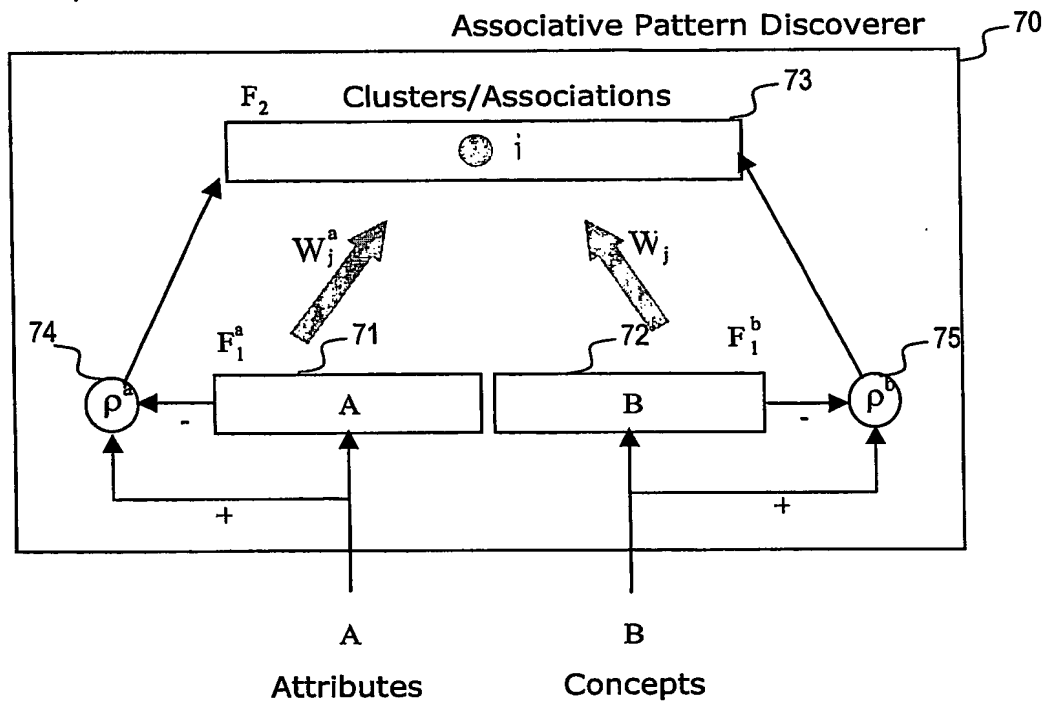


FIG. 4

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Category choice: $T_j = \gamma \frac{|A \wedge W_j^a|}{\alpha^a + |W_j^a|} + (1-\gamma) \frac{|B \wedge W_j^b|}{\alpha^b + |W_j^b|}$

**FIG. 5**

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Template learning

$$w_j^{a(new)} = (1 - \beta^a) w_j^{a(old)} + \beta^a (A \wedge w_j^{a(old)})$$

$$w_j^{b(new)} = (1 - \beta^b) w_j^{b(old)} + \beta^b (B \wedge w_j^{b(old)})$$

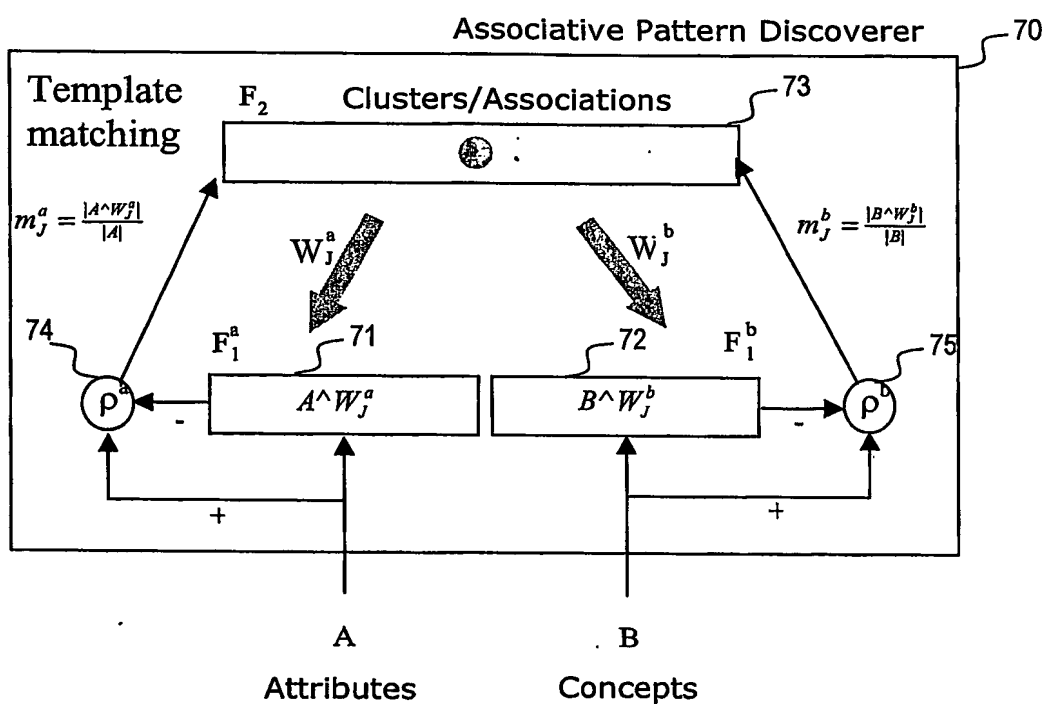
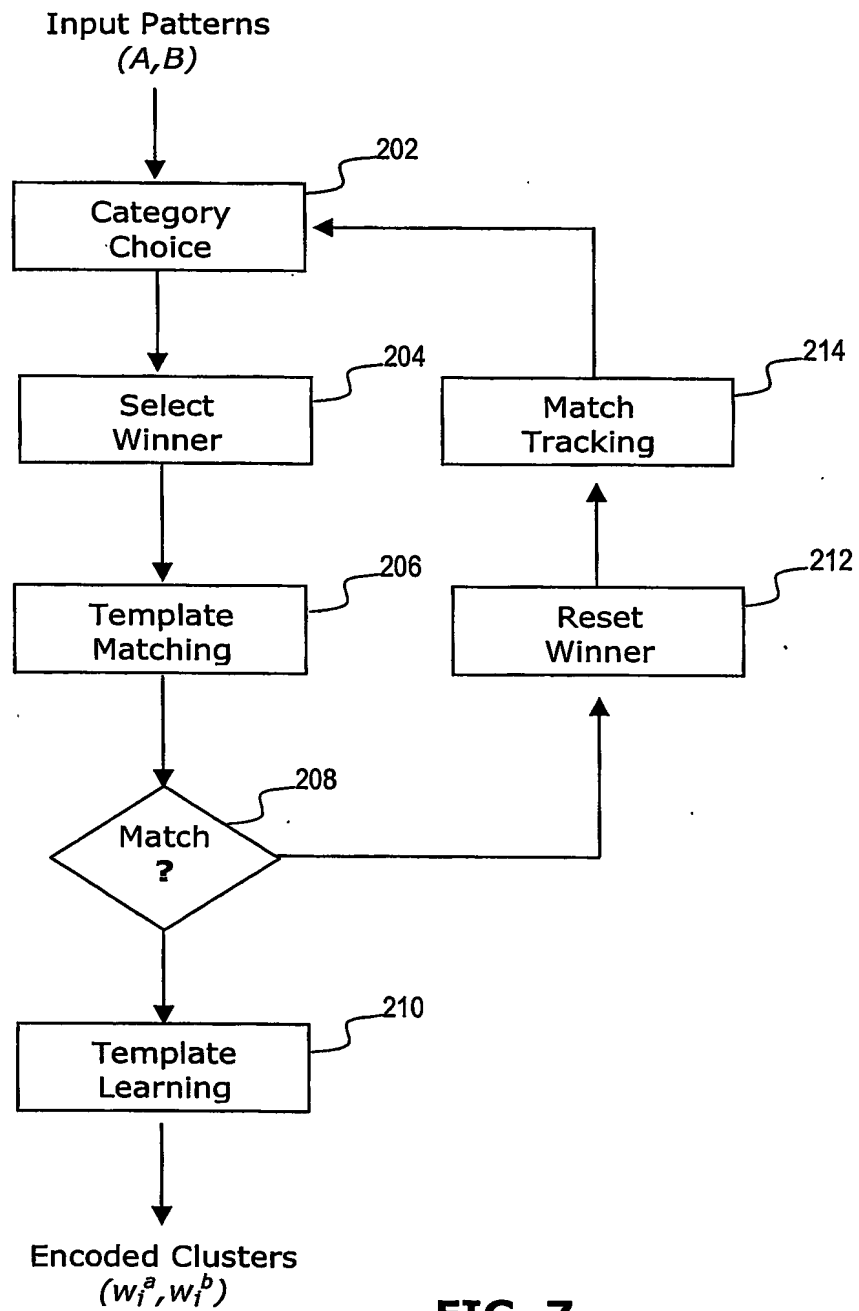
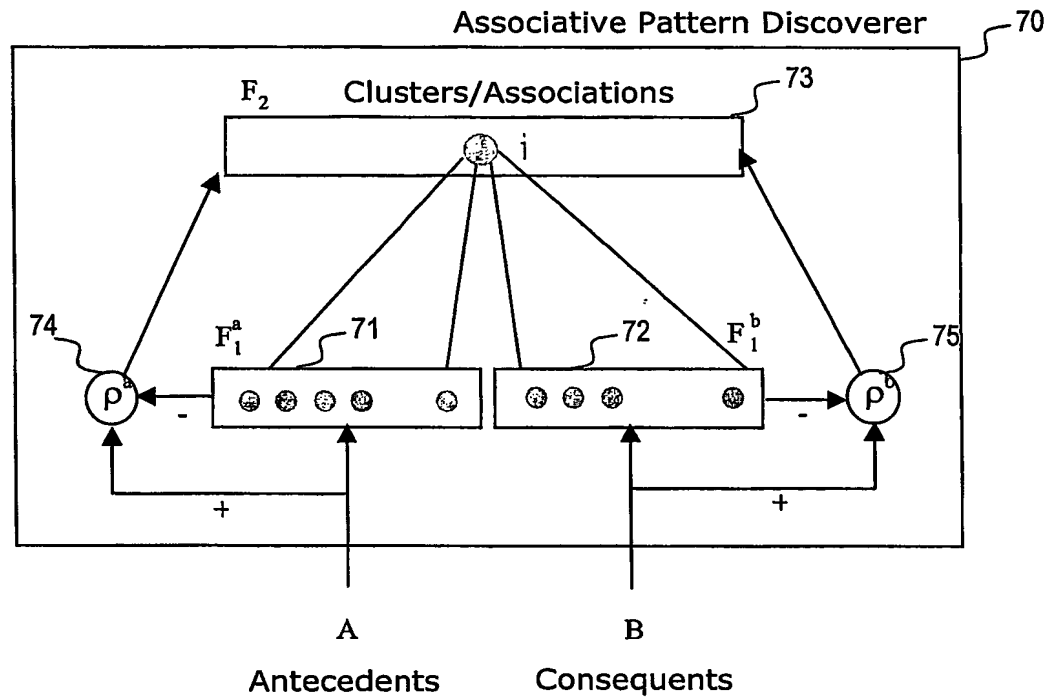


FIG. 6

**FIG. 7**

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**FIG. 8**

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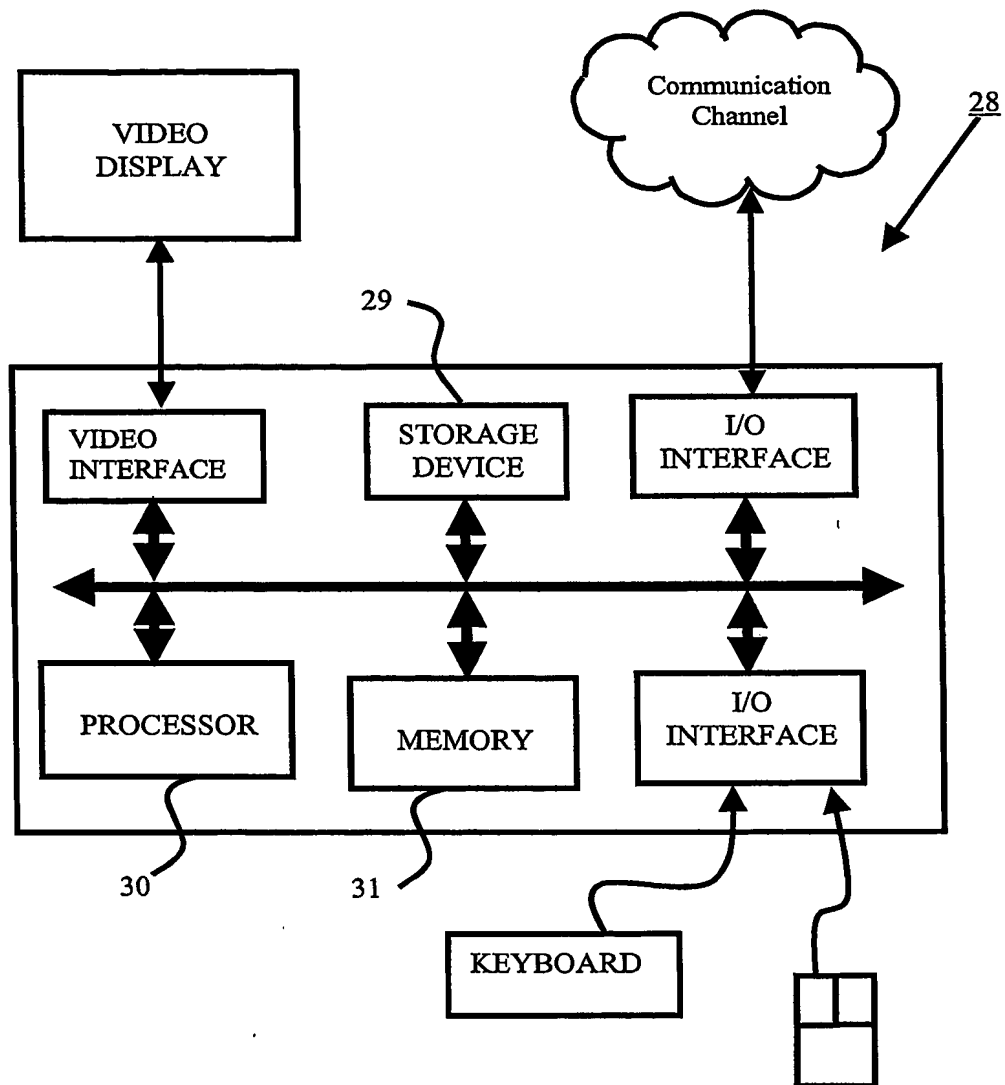


FIG. 9